

**IT IS THE VENDOR'S RESPONSIBILITY TO CHECK FOR
ADDENDUMS PRIOR TO SUBMITTING PROPOSALS**

NOTICE TO BIDDERS SPECIFICATION NO. 02-041

The City of Lincoln, Nebraska intends to purchase and invites you to submit a sealed bid
for:

THERMOPLASTIC MOLTEN PAVEMENT MARKING MATERIAL

Sealed bids will be received by the City of Lincoln, Nebraska on or before 12:00 noon Wednesday, February 20, 2002, in the office of the Purchasing Agent, Suite 200, K Street Complex, Southwest Wing, 440 South 8th Street, Lincoln, Nebraska 68508. Bids will be publicly opened and read at the K Street Complex.

Bidders should take caution if U.S. mail or mail delivery services are used for the submission of bids. Mailing should be made in sufficient time for bids to arrive in the Purchasing Division, prior to the time and date specified above.

INSTRUCTIONS TO BIDDERS

CITY OF LINCOLN, NEBRASKA PURCHASING DIVISION

1. BIDDING PROCEDURE

- 1.1 Bidder shall submit two (2) complete sets of the bid documents and all supporting material. All appropriate blanks shall be completed. Any interlineation, alteration or erasure on the specification document shall be initialed by the signer of the bid. Bidder shall not change the proposal form nor make additional stipulations on the specification document. Any amplified or qualifying information shall be on the bidder's letterhead and firmly attached to the specification document.
- 1.2 Bid prices shall be submitted on the Proposal Form included in the bid document.
- 1.3 Bidders may submit a bid on an "all or none" or "lump sum" basis, but should also submit a quotation on an item-by-item basis. Bidding documents shall be clearly marked indicating the kind of proposal being submitted.
- 1.4 Each bid must be legibly printed in ink or by typewriter, include the full name, business address, and telephone number of the bidder; and be signed in ink by the bidder.
- 1.5 A bid by a firm or organization other than a corporation must include the name and address of each member.
- 1.6 A bid by a corporation must be signed in the name of such corporation by a duly authorized official thereof.
- 1.7 Any person signing a bid for a firm, corporation, or other organization must show evidence of his authority so to bind such firm, corporation, or organization.
- 1.8 Bids received after the time and date established for receiving bids will be rejected.

2. BIDDER'S SECURITY

- 2.1 Bid security, as a guarantee of good faith, in the form of a certified check, cashier's check, or bidder's bond, may be required to be submitted with this bid document, as indicated of the Proposal Form.
- 2.2 If alternate bids are submitted, only one bid security will be required, provided the bid security is based on the amount of the highest gross bid.
- 2.3 Such bid security will be returned to the unsuccessful bidders when the award of bid is made.
- 2.4 Bid security will be returned to the successful bidder(s) as follows:
 - 2.4.1 For single order bids with specified quantities: upon the delivery of all equipment or merchandise, and upon final acceptance by the City.
 - 2.4.2 For all other contracts: upon approval by the City of the executed contract and bonds.
- 2.5 City shall have the right to retain the bid security of bidders to whom an award is being considered until either:
 - 2.5.1 A contract has been executed and bonds have been furnished.
 - 2.5.2 The specified time has elapsed so that the bids may be withdrawn.
 - 2.5.3 All bids have been rejected.

- 2.6 Bid security will be forfeited to the City as full liquidated damages, but not as a penalty, for any of the following reasons, as pertains to this specification document:

- 2.6.1 If the bidder fails to deliver the equipment or merchandise in full compliance with the accepted proposal and specifications.
- 2.6.2 If the bidder fails or refuses to enter into a contract on forms provided by the City, and/or if the bidder fails to provide sufficient bonds or insurance within the time period as established in this specification document.

3. EQUAL OPPORTUNITY

- 3.1 Each bidder agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, disability, age, or marital status. Bidder shall fully comply with the provisions of Chapter 11.08 of the Lincoln Municipal Code.
- 3.2 Successful bidder will be required to comply with the provisions of the City's Affirmative Action Policy (Contract Compliance, Sec. 1.16).
- 3.3 The Equal Opportunity Officer will determine compliance or non-compliance with the City's Affirmative Action Policy upon a complete and substantial review of successful bidder's equal opportunity policies, procedures and practices.

4. DATA PRIVACY

- 4.1 Bidder agrees to abide by all applicable State and Federal laws and regulations concerning the handling and disclosure of private and confidential information concerning individuals and corporations as to inventions, copyrights, patents and patent rights.
- 4.2 The bidder agrees to hold the City harmless from any claims resulting from the bidder's unlawful disclosure or use of private or confidential information.

5. BIDDER'S REPRESENTATION

- 5.1 Each bidder by signing and submitting a bid, represents that the bidder has read and understands the specification documents, and the bid has been made in accordance therewith.
- 5.2 Each bidder for services further represents that the bidder is familiar with the local conditions under which the work is to be done and has correlated the observations with the requirements of the bid documents.

6. INDEPENDENT PRICE DETERMINATION

- 6.1 By signing and submitting this bid, the bidder certifies that the prices in this bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder prior to bid opening

directly or indirectly to any other bidder or to any competitor; no attempt has been made, or will be made, by the bidder to induce any person or firm to submit, or not to submit, a bid for the purpose of restricting competition.

7. CLARIFICATION OF SPECIFICATION DOCUMENTS

- 7.1 Bidders shall promptly notify the Purchasing Agent of any ambiguity, inconsistency or error which they may discover upon examination of the specification documents.
- 7.2 Bidders desiring clarification or interpretation of the specification documents shall make a written request which must reach the Purchasing Agent at least seven (7) calendar days prior to the date and time for receipt of bids.
- 7.3 Interpretations, corrections and changes made to the specification documents will be made by written addenda.
- 7.4 Oral interpretations or changes to the Specification Documents made in any other manner, will not be binding on the City; and bidders shall not rely upon such interpretations or changes.

8. ADDENDA

- 8.1 Addenda are written instruments issued by the City prior to the date for receipt of bids which modify or interpret the specification document by addition, deletion, clarification or correction.
- 8.2 Addenda will be mailed or delivered to all who are known by the City to have received a complete set of specification documents.
- 8.3 Copies of addenda will be made available for inspection at the office of the Purchasing Agent.
- 8.4 No addendum will be issued later than forty-eight (48) hours prior to the date and time for receipt of bids, except an addendum withdrawing the invitation to bid, or an addendum which includes postponement of the bid.
- 8.5 Bidders shall ascertain prior to submitting their bid that they have received all addenda issued, and they shall acknowledge receipt of addenda on the proposal form.

9. BRAND NAMES

- 9.1 Wherever in the specifications or proposal form brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing a grade or quality of material only; and the term "or equal" is deemed to follow.
- 9.2 It is the bidder's responsibility to identify any alternate items offered in the bid, and prove to the satisfaction of the City that said item is equal to, or better than, the product specified.
- 9.3 Bids for alternate items shall be stated in the appropriate brand on the proposal form, or if the proposal form does not contain blanks for alternates, bidder MUST attach to the specification documents on Company letterhead a statement identifying the manufacturer and brand name of each proposed alternate, plus a complete description of the alternate items including illustrations, performance test data and any other information necessary for an evaluation. The bidder must indicate any variances by item number from the specification document no matter how slight. Bidder must fully explain the variances from the specification document, since brochure information may not be sufficient.

- 9.4 If variations are not stated in the proposal, it will be assumed that the item being bid fully complies with the City's specifications.

10. DEMONSTRATIONS/SAMPLES

- 10.1 Bidders shall demonstrate the exact item(s) proposed within seven (7) calendar days from receipt of such request from the City.
- 10.2 Such demonstration can be at the City delivery location or a surrounding community.
- 10.3 If bidder does not have an item in the area, it will be at the bidder's expense to send appropriate City personnel to the nearest location to view and inspect proposed item(s).
- 10.4 If items are small and malleable, and the bidder is proposing an alternate product, the bidder MUST supply a sample of the exact item. Samples will be returned at bidder's expense after receipt by the City of acceptable goods. Bidders must indicate how samples are to be returned.

11. DELIVERY

- 11.1 Each bidder shall state on his proposal form the date upon which he can make delivery of all equipment or merchandise. Time required for delivery is hereby made an essential element of the bid.
- 11.2 The City reserves the right to cancel orders, or any part thereof, without obligation, if delivery is not made within the time(s) specified on the proposal form.
- 11.3 All bids shall be based upon **inside** delivery of the equipment or merchandise F.O.B. the City at the location specified by the City, with all transportation charges paid.

12. WARRANTIES, GUARANTEES AND MAINTENANCE

- 12.1 Copies of the following documents must accompany the bid proposal for all items being bid:
 - 12.1.1 Manufacturer's warranties and/or guarantees.
 - 12.1.2 Bidder's maintenance policies and associated costs.
- 12.2 As a minimum requirement of the City, the bidder will guarantee in writing that any defective components discovered within a one (1) year period after the date of acceptance shall be replaced at no expense to the City. Replacement parts of defective components shall be shipped at no cost to the City. Shipping costs for defective parts required to be returned to the bidder shall be paid by the bidder.
- 12.3 Bidder Warrants and represents to the City that all software/firmware/ hardware/equipment /systems developed, distributed, installed or programmed by Bidder pursuant to this Specification and Agreement.
 - 12.3.1 That all date recognition and processing by the software/firmware/hardware/equipment/system will include the four-digit-year format and will correctly recognize and process the date of February 29, and any related data, during Leap years; and
 - 12.3.2 That all date sorting by the software /firmware/hardware/ equipment/system that includes a "year category" shall be done based on the four-digit-year format. Upon being notified in writing by the City of the failure of any

software/ firmware/ hardware /equipment /systems to comply with this Specification and Agreement, Contractor will, within 60 days and at no cost to the City, replace or correct the non-complying software/ firmware/ hardware/ equipment/ systems with software/firmware/ hardware/equipment/ systems that does comply with this Specification and Agreement.

- 12.3.3 No Disclaimers: The warranties and representations set forth in this section 12.3 shall not be subject to any disclaimer or exclusion of warranties or to any limitations of Licensor's liability under this Specification and Agreement.

13. ACCEPTANCE OF MATERIAL

- 13.1 All components used in the manufacture or construction of materials, supplies and equipment, and all finished materials, shall be new, the latest make/model, of the best quality, and the highest grade workmanship.
- 13.2 Material delivered under this proposal shall remain the property of the bidder until:
- 13.2.1 A physical inspection and actual usage of this material is made and found to be acceptable to the City; and
- 13.2.2 Material is determined to be in full compliance with the specifications and accepted proposal.
- 13.3 In the event the delivered material is found to be defective or does not conform to the specification documents and accepted proposal, then the City reserves the right to cancel the order upon written notice to the bidder and return materials to the bidder at bidder's expense.
- 13.4 Successful bidder shall be required to furnish title to the material, free and clear of all liens and encumbrances, issued in the name of the City of Lincoln, Nebraska, as required by the specification documents or purchase orders.
- 13.5 Selling dealer's advertising decals, stickers or other signs shall not be affixed to equipment. Vehicle mud flaps shall be installed blank side out with no advertisements. Manufacturer's standard production forgings, stampings, nameplates and logos are acceptable.

14. BID EVALUATION AND AWARD

- 14.1 The signed bid proposal shall be considered an offer on the part of the bidder. Such offer shall be deemed accepted upon issuance by the City of purchase orders, contract award notifications, or other contract documents appropriate to the work.
- 14.2 No bid shall be modified or withdrawn for a period of sixty (60) calendar days after the time and date established for receiving bids, and each bidder so agrees in submitting the bid.
- 14.3 In case of a discrepancy between the unit prices and their extensions, the unit prices shall govern.

- 14.4 The bid will be awarded to the lowest responsive, responsible bidder whose proposal will be most advantageous to the City, and as the City deems will best serve their requirements.

- 14.5 The City reserves the right to accept or reject any or all bids; to request rebids; to award bids item-by-item, by groups, or "lump sum"; to waive irregularities and technicalities in bids; such as shall best serve the requirements and interests of the City.

15. INDEMNIFICATION

- 15.1 The bidder shall indemnify and hold harmless the City, its members, its officers and employees from and against all claims, damages, losses, and expenses, including, but not limited to attorney's fees arising out of or resulting from the performance of the contract, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property other than goods, materials and equipment furnished under this contract) including the loss or use resulting therefrom; is caused in whole or part by any negligent act or omission of the bidder, any subcontractor, or anyone directly or indirectly employed by any one of them or anyone for whose acts made by any of them may be liable, regardless of whether or not it is caused by a party indemnified hereunder.
- 15.2 In any and all claims against the City or any of its members, officers or employees by an employee of the bidder, any subcontractor, anyone directly or indirectly employed by any of them or by anyone for whose acts made by any of them may be liable, the indemnification obligation under paragraph 15.1 shall not be limited in any way by any limitation of the amount or type of damages, compensation or benefits payable by or for the bidder or any subcontractor under worker's or workmen's compensation acts, disability benefit acts or other employee benefit acts.

16. TERMS OF PAYMENT

- 16.1 Unless other specification provisions state otherwise, payment in full will be made by the City within thirty (30) calendar days after all labor has been performed and all equipment or other merchandise has been delivered, and all such labor and equipment and other materials have met all contract specifications.

17. LAWS

- 17.1 The Laws of the State of Nebraska shall govern the rights, obligations, and remedies of the Parties under this proposal and any agreement reached as a result of this process.

SPECIAL PROVISIONS FOR COMMODITY TERM CONTRACTS

CITY OF LINCOLN, NEBRASKA PURCHASING DIVISION

1. ESTIMATED QUANTITIES

- 1.1 The quantities set forth in the specification document are approximate and represent the estimated requirements of the City for the contract period.
- 1.2 Items listed may or may not be inclusive of City requirements for this category.
- 1.3 Category items not listed, but distributed by bidder are to be referred to as kindred items. Kindred items shall receive the same percentage of discount or pricing structure as items listed in the specification document.
- 1.4 The unit prices and the extended total prices shall be used only as a basis for the evaluation of bids. The actual quantity of materials necessary may be more or less than the estimates listed in the specification document, but the City shall be neither obligated nor limited to any specified amount. The City will, if possible, restrict increases/decreases to 20% of the estimated quantities listed in the specification document.

2. CONTRACT PERIOD

- 2.1 The material shall be delivered as ordered during the contract period, beginning from the date of contract and ending one (1) year from that date, or as otherwise indicated on the proposal form.
- 2.2 The City is interested in a one (1) year contract, with the option to renew for additional one (1) year periods, not to exceed three (3) such renewals. Bidder must indicate on the proposal form if extension renewals are an option. By mutual consent of both parties it is understood and agreed that the contract may be renewed only at the same prices and/or under the same conditions governing the original contract; and any request for an increase in price or a change in the contract conditions shall be interpreted as a request not to renew the contract at the end of the current contract period.

3. BID PRICES

- 3.1 Bidders must state on the proposal form if the bid prices will remain firm for the full contract period; or if the bid prices will be subject to escalation/de-escalation.
- 3.2 Escalation/De-escalation Clause: In the event that prevailing market conditions warrant an adjustment in bid prices contained in the contract, the following escalation/de-escalation clause shall be the only clause applicable or acceptable to the City:
 1. Contractor shall give written notice to the Purchasing Agent of any proposed changes from contract prices not less than thirty (30) calendar days prior to the effective date of said price changes.
 2. Such notice must be accompanied by a certified copy of the supplier's advisory or notification to the contractor of price changes.
 3. No price escalation will be authorized in excess of the amount of the increase referred to on the supplier's notice.
 4. The approved price change shall be honored for all orders received by the contractor after the effective date of such price change.

5. Approved price changes are not applicable to orders already issued and in process at time of price change.
6. The City reserves the right to audit and/or examine any pertinent books, documents, papers, records or invoices relating directly to the contract transaction in question after reasonable notice and during normal business hours.
7. The Purchasing Agent retains the right to determine whether or not such proposed price changes are in the best interests of the City.
8. If in the opinion of the Purchasing Agent any proposed increase is found unacceptable, the Purchasing Agent reserves the right to cancel the contract upon thirty (30) calendar days written notice.
9. Contractors must tie any price change clause to an industry-wide or otherwise nationally recognized index, or some other form of verifiable document. Contractor will put the Purchasing Agent on the mailing lists for such publication so that the Purchasing Agent can monitor said changes. Such membership will be at no cost to the City.

4. CONTRACT AWARD NOTIFICATION

- 4.1 The Purchasing Division will issue a Contract Award Notification to all successful bidders. Such contract award notification will incorporate the City's specifications, and may incorporate the bidder's specifications.
- 4.2 No action need be taken by the contractors at time of receipt of such Contract Award Notification.
- 4.3 Orders for materials will be made as needed by the various City Departments.

5. QUARTERLY REPORT

- 5.1 The contractor shall provide to the Purchasing Agent a quarterly report, showing all purchases made under the terms and conditions of the contract.
- 5.2 Such quarterly report shall itemize the following information:
 1. Each ordering department.
 2. Items and quantities purchased by department.
 3. Total dollar amount of purchases by department.

CITY OF LINCOLN
ENGINEERING SERVICES & TRAFFIC OPERATIONS

**SPECIFICATIONS FOR
THERMOPLASTIC MOLTEN PAVEMENT MARKING MATERIAL**

1. SCOPE

- 1.1 These specifications cover a white reflectorized thermoplastic pavement marking material of a type that is suitable for application to Portland cement, concrete pavement or aged asphaltic concrete pavement without sealer or primer in a molten state by mechanical means with surface application of glass beads which, upon cooling to normal pavement temperature, produces an adherent reflectorized marking of specified thickness and width and capable of resisting deformation by traffic.

2. CHARACTERISTICS OF MATERIAL

2.1 General:

- 2.1.1 The compound shall not deteriorate upon contact with sodium chloride, calcium chloride or other chemical used to prevent formation of ice on roadways or streets, or because of the content of pavement materials, and shall be impervious to oil and grease drippings from traffic.
- 2.1.2 In the molten state, the material shall not give off fumes which are toxic or otherwise injurious to persons or property.
- 2.1.3 The material shall not break down, deteriorate, scorch, or discolor if held at the molten temperature for a period of four hours, or by reason of four reheatings to the molten temperature.
- 2.1.4 The temperature versus viscosity characteristics of the plastic material shall remain constant through up to four reheatings, and shall be the same from batch to batch.
- 2.1.5 There shall be no obvious change in color of the material as the result of up to four reheatings, or from batch to batch.
- 2.1.6 The material shall be free from all skins, dirt, foreign objects, or such ingredients as will cause bleeding, staining, or discoloration.

- 2.2 Material Formula: The vendor shall have the option of manufacturing the thermoplastic pavement marking materials according to his own formulas.

- 2.2.1 Irrespective of which formula is used in the manufacture, the material shall contain not less than 30% by weight of glass beads, not less than 22% nor more than 26% by weight of resin binder, and not less than 10% by weight of titanium dioxide.
- 2.2.2 The binder shall contain not less than 8% by weight of maleic-modified glycerol ester resin.
- 2.2.3 The filler shall be white calcium carbonate or equivalent filler with a compressive strength of five thousand (5,000) pounds per square inch.
- 2.2.4 The pigment, beads, and filler shall be evenly dispersed in the resin binder.

- 2.3 Suitability for Application: The thermoplastic material shall be a product especially compounded for traffic markings.
- 2.3.1 The markings shall not show appreciable deformation or discoloration under normal traffic conditions at temperatures below 140°F.
- 2.3.2 Markings shall have a uniform cross-section.
- 2.3.3 The density and character of the material shall be uniform throughout its thickness.
- 2.3.4 The stripe shall maintain its original dimensions and placement.
- 2.3.5 The exposed surface shall be free from tack and shall not be slippery when wet.
- 2.3.6 The material shall not lift from the pavement in freezing weather.
- 2.3.7 Cold ductility of the material shall be such as to permit normal movement with the road surface without chipping or cracking.
- 2.3.8 When applied at the maximum bond temperature certified by the material manufacturer and thickness of 1/8 inch to 3/16 inch, the material shall set to bear traffic in not more than two minutes when the air temperature is 50°F., and not more than ten minutes when the air temperature is 90°F.
- 2.3.9 The thermoplastic material shall readily extrude at temperatures below 450°F. from the equipment used to produce a cross-section of line 1/8-inch to 3/16-inch thick which shall be continuous, uniform in shape and have clear and sharp dimensions.
- 2.4 Reflectorization: During manufacture, reflectorizing glass beads shall be mixed into the material to the extent of not less than 30% nor more than 40% by weight of the material.
- 2.4.1 Required properties of glass beads used shall be as per Section 4 of this specification.

3. PHYSICAL REQUIREMENTS OF MATERIAL

- 3.1 Color: White.
- 3.1.1 As demonstrated by a standard color difference meter, the material shall show deviations from a magnesium oxide standard not greater than the following after the material has been heated for four hours at 425°F.:
- | | |
|-------------------------|-----------------|
| Reflectance (Rd) | 75 Minimum |
| Redness-Greenness (a) | 0 ...+ or - 5% |
| Yellowness-Blueness (b) | 0 ...+ or - 10% |
- 3.1.2 White thermoplastic material shall contain a minimum of 10% titanium dioxide by weight and, after setting, shall be pure white and free from dirt or tint.
- 3.2 Color Retention: Retention of the initial color shall be determined by the following procedure:
- 3.2.1 Specimens shall be prepared and tested from samples submitted in accordance with ASTM D-795.
- 3.2.2 The ultra-violet light source shall be as specified in the test procedure, or may be a General Electric 275-watt sun lamp, type RS, with a built-in reflector.
- 3.2.3 After 100 hours of exposure, the test specimens should show no perceptible color change (as indicated by comparison with an unexposed specimen).

- 3.3 Water Absorption: Material shall have no more than 0.5%, by weight, of retained water when tested by ASTM D-570, "Water Absorption of Plastic", procedure (A).
- 3.4 Softening Point: Material shall have a softening point of not less than 200°F. after the material has been heated for four hours at 425°F., as determined by ASTM E-28.
- 3.5 Specific Gravity: Specific gravity of the thermoplastic compound at 77°F. shall be from 1.6 to 2.15.
- 3.6 Impact Resistance:
- 3.6.1 Impact resistance shall not be less than 11 inches-pounds at 77°F. after the material has been heated for four hours at 425°F. and cast into bars of one inch cross-sectional area, three inches long and placed with one inch extending above the vice in a cantilever beam (IZOD Type) tester using the 25 inch-pound scale.
- 3.6.2 This device is described in ASTM D-256.
- 3.6.3 When tested by the Gardner Falling Weight method, impact resistance shall be not less than 80 inch-pounds (9.0 N•m) with no visible surface cracks after the material has been heated for (4) hours at 425°F (218°C) and applied to a portland cement concrete block, allowed to cool and tested in accordance with ASTM D 5420, Section II.
- 3.7 Flowability:
- 3.7.1 After heating for four hours at 425°F., the material shall have a maximum flow residue of 18 percent.
- 3.7.2 After heating for two hours and subsequently stirring for six hours at 200 rpm at 425°F., the material shall have a maximum flow residue of 28 percent.
- 3.8 Bond Strength: When two concrete blocks, 2 inches x 3 1/2 inches x 7 inches are bonded together on the 3 1/2 inch x 7 inch faces with a 1/16 to 1/8 inch layer of the thermoplastic pavement marking material and tested in accordance with ASTM D-4796, the bond strength shall be not less than 275 pounds per square inch.
- 3.8.1 The material must also retain a 180 pound per square inch minimum bond strength when tested by the Freeze-Thaw described in Section 5.3 of this specification.
- 3.9 Indentation Resistance: The reading of the Shore Durometer, type A2 as described in ASTM D-2240, after fifteen seconds and using a two-pound weight, shall not be less than the amounts specified below when the material is tested after heating for four hours at 425°F. and cooled to the following temperatures:
- | <u>Temperature</u> | <u>Reading</u> |
|--------------------|-----------------|
| 115°F. | 65 ...+ or - 2% |
| 77°F. | 95 ...+ or - 2% |
- 3.10 Abrasion Resistance: The material shall show a maximum loss of 0.5 grams when subjected to 200 revolutions on a Taber abraser at 25°C., using H-22 calibrase wheels weighted to 500 grams.
- 3.10.1 The wearing surface should be kept wet with distilled water throughout the test.
- 3.10.2 The panel for this test shall be prepared by forming a representative lot of material at a thickness of 0.125 inch on a 4 inch square model panel (thickness 0.050 inch + 0.001 inch) on which a suitable primer has been previously applied.

- 3.11 Low Temperature Stress Resistance: The material shall show no cracking when tested according to AASHTO T250, Section 7 with Section 7.2.3 modified for an extended cold temperature [$15^{\circ} \pm 3^{\circ}\text{F}$ ($9.4^{\circ} \pm 2^{\circ}\text{C}$)] exposure period of 72 hours.

4. PROPERTIES OF GLASS BEADS FOR REFLECTORIZATION

- 4.1 Crushing Resistance: The average crushing resistance of glass beads shall be 40-pound dead weight for 20 to 30 mesh beads.
- 4.2 Roundness: A minimum of 80% of the beads of each sieve size shall be water white true spheres as determined by ASTM D-1155, and shall be free from imperfections of all types including film, scratches, pits, clusters, opaqueness, and non-spherical shape.
- 4.3 Index of Refraction: The glass beads shall have a refractive index of not less than 1.50 when tested by the liquid immersion method at 25°C .

- 4.4 Gradation: Glass beads intermixed in the thermoplastic material shall have the following graduations when tested in accordance with ASTM D-1214:

<u>Sieve Number</u>	<u>Percent Passing</u>
20	95 - 100
30	80 - 95
50	40 - 70
100	0 - 10

- 4.5 Chemical Resistance: The glass beads shall withstand immersion in water and acids without undergoing noticeable corrosion or etching and shall not be darkened or other wise noticeably decomposed by sulfides.
- 4.5.1 The tests for chemical resistance shall consist of one hour immersion in water and in solutions of corrosive agents followed by microscopic inspection.
- 4.5.2 A three to five gram portion of the sample shall be placed in each of three Pyrex-glass beakers or porcelain dishes; once sample shall be covered with distilled water, one with a 3N solution of sulfuric acid and the other with a 50% solution of sodium sulfide.
- 4.5.3 After one hour of immersion, the glass beads of each sample shall be examined microscopically for evidence of darkening and frosting.

5. TESTING

- 5.1 Pavement Marking Material: The manufacturer shall furnish the City of Lincoln Street and Traffic Operations Division with three copies of a notarized, certified, test report from an independent laboratory showing the results of tests conducted on the formula and physical requirements of the thermoplastic material in each manufacturing lot or batch to be shipped to the project.
- 5.1.1 The minimum size batch of thermoplastic pavement marking material sampled and tested shall not be less than 3,000 pounds.
- 5.1.2 The material shall be tested in accordance with the appropriate method in AASHTO T-250 or as noted.

5.2 Glass Beads: The manufacturer shall furnish the City of Lincoln Street and Traffic Division with three copies of a notarized certified test report from an independent laboratory showing the results of tests conducted on the glass beads to be intermixed in the material.

5.3 Freeze-Thaw Test (Texas Transport Institute Method)

5.3.1 Objective: The test is designed to determine the extent to which thermoplastic materials retain their original properties and bond strength after repeated freeze-thaw cycles.

5.3.1.1 The material-primer system must be capable of retaining an average bond strength for 3 tests in excess of 180 psi.

5.3.1.2 The proper primer shall be supplied by the manufacturer of the thermoplastic material.

5.3.2 Apparatus:

(1) Concrete blocks.

(2) Bond strength testing apparatus.

(3) Primer supplied by the thermoplastic manufacturer.

(4) 2-inch (5.1 cm) diameter metal cylinders (three for each material tested).

(5) Large containers of water.

(6) Adhesive (epoxy).

5.3.3 Procedure:

5.3.3.1 The thermoplastic shall be heated to 425°F., and applied over the primer on the concrete block in 2-inch (5.1 cm) diameter bond strength specimens (3 per block).

5.3.3.2 After a minimum 24-hour curing time, cement a 2-inch metal cylinder to each thermoplastic specimen with epoxy adhesive.

5.3.3.2.1 Take care to remove any excess epoxy and do not allow the epoxy to flow out and over the thermoplastic.

5.3.3.3 After allowing the epoxy to cure for 24 hours, the samples shall be subjected to 5 cycles of freeze-thaw.

5.3.3.3.1 Do this by allowing water to freeze up to the tops of the concrete blocks, without water contact with the thermoplastic, in a -10°F. environment.

5.3.3.3.2 The samples are then placed in a 100°F. environment to thaw.

5.3.3.3.3 The freeze cycle shall be for 8 hours and the thaw cycle for 16 hours, completing a 24-hour day.

5.3.3.4 After the five cycles of Section 5.3.3.3, pull the patties apart at room temperature and record the bond strength.

6. APPROVED MATERIAL

6.1 The City reserves the right to conduct whatever tests are deemed necessary to identify and determine the quality, characteristics and uniformity of any material.

- 6.2 Thermoplastic (molten) pavement marking materials intended for application to portland cement concrete pavement, or aged asphaltic concrete pavement without sealer or primer, and which have not been tested and given prior approval by the Engineer, will not be permitted.

7. PACKAGING, SHIPPING AND LABELING

- 7.1 The thermoplastic material shall be shipped in granular form in 50-pound bags that are waterproof and to which the material will not adhere during shipment or storage.
- 7.2 The bags shall be strong enough to permit normal handling during shipment and transportation after exposure to high humidity.
- 7.3 Each bag shall be labeled to designate the color, manufacturer's name, batch number, and date of manufacture.
- 7.4 Each batch manufactured shall have its own separate number.
- 7.5 The manufacturer shall state on the bag an application temperature which his experience indicates a maximum bond strength will be achieved.
- 7.6 The label shall warn the user of the maximum temperature that the material may be heated during application.

**PROPOSAL
SPECIFICATION NO. 02-041**

BID OPENING TIME: 12:00 NOON

DATE: February 20, 2002

The undersigned bidder, having full knowledge of the requirements of the City of Lincoln for the below listed items and the contract documents (which include Notice to Bidders, Instructions to Bidders, this Proposal, Specifications, Contract, and any and all addenda) and all other conditions of the Proposal, agrees to sell to the City the below listed items for the performance of this Specification, complete in every respect, in strict accordance with the contract documents at and for unit prices listed below.

ADDENDA RECEIPT: The receipt of addenda to the specifications numbers _____ through _____ are hereby acknowledged. Failure of any bidder to receive any addendum or interpretation of the specifications shall not relieve the bidder from obligations specified in the bid request. all addenda shall become part of the final contract document.

BIDDING SCHEDULE

<u>ITEM</u>	<u>ITEM DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>TOTAL</u>
1.	THERMOPLASTIC MOLTEN PAVEMENT MARKING MATERIAL FOR APPLICATION TO PORTLAND CEMENT CONCRETE PAVEMENT MFG. _____ PRODUCT NO. _____	10 TN	\$ _____	\$ _____
2.	THERMOPLASTIC MOLTEN PAVEMENT MARKING MATERIAL FOR APPLICATION TO ASPHALTIC CONCRETE PAVEMENT MFG. _____ PRODUCT NO. _____	10 TN	\$ _____	\$ _____
TOTAL BID				\$ _____

NO BID SECURITY REQUIRED

Term of contract is one (1) year, March 1, 2002 through March 1, 2003.

Special provisions for Commodity Term Contracts are included with the specification document. Bidders are urged to read the Special Provisions before completing the following sections of the Proposal.

Contract Extension Renewal is an option: Yes ____
No ____

TERM PRICE CLAUSE: BIDDER MUST STATE

- (a) Bid prices firm for the full contract period: ____; or
(b) Bid prices subject to escalation/de-escalation: ____.
(c) If (b), state period for which prices will remain firm:
Through ____.

COMPANY REPRESENTATIVE responsible for the administration of this Agreement:

NAME: _____
TITLE: _____
PHONE NO. _____

AFFIRMATIVE ACTION PROGRAM: Successful bidder will be required to comply with the provisions of the City's Affirmative Action Policy (Contract Compliance, Sec. 1.16). The Equal Opportunity Officer will determine compliance or non-compliance, upon a complete and substantial review of successful bidder's equal opportunity policies, procedures and practices.

The undersigned signatory for the bidder represents and warrants that he has full and complete authority to submit this proposal to the City, and to enter into a contract if this proposal is accepted.

**RETURN 2 COMPLETE COPIES OF PROPOSAL AND SUPPORTING MATERIAL.
MARK OUTSIDE OF BID ENVELOPE: SEALED BID FOR SPEC.02-041**

COMPANY NAME

BY (Signature)

STREET ADDRESS or P.O. BOX

(Print Name)

CITY, STATE ZIP CODE

(Title)

TELEPHONE

(Date)

EMPLOYER'S FEDERAL I.D. NO.
OR SOCIAL SECURITY NUMBER

ESTIMATED DELIVERY DAYS